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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,700	07/27/2001	Hiroshi Yamamoto	49084 DIV (70904)	9052
21874	7590	01/13/2004		
EDWARDS & ANGELL, LLP			EXAMINER	
P.O. BOX 9169			WILSON, DONALD R	
BOSTON, MA 02209			ART UNIT	PAPER NUMBER

1713

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/916,700

Applicant(s)

YAMAMOTO ET AL.

Examiner

Donald R Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-17, 19 and 21-31 is/are pending in the application.
- 4a) Of the above claim(s) 25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-17, 19, 21-24 and 26-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed 11/24/03, has been fully considered with the following results.
2. The rejection of Claims 14-16, 21-24 and 26-27 under 35 U.S.C. 102(b) as being anticipated by Wheeler are overcome by the amendment and the rejection is withdrawn.
3. The other rejections from the previous Office Action are maintained as is discussed below.

Previously Cited Statutes

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Claim Rejections - 35 USC § 102(b)/§ 103(a)

5. **Claims 14-19, 21-24 and 26-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheeler, Clayton, Rabon and Pike, each in view of Battaerd'481.** The basis of this rejection was stated in Detailed Action § 7-11 of the previous Office Action.
6. This rejection has been changed to be collectively in view of Wheeler, Clayton, Rabon and Pike in view of Battaerd'481, and the rejection has been made non-final.
7. In regards to the limitations of new claims 30 and 31 concerning swelling ranges, this is not seen to be outside of what would have been obvious from the combined teachings of the references. Note that Clayton teaches an advantage of a swelling capacity of about 75% to about 250%, which would include gels with a swell ratio of 3.

At least about 10 % was held to be anticipated by a teaching of a content not to exceed about 8 %. *In re Ayers*, 154 F.2d 182, 69 USPQ 109 (CCPA) 1946).

A pressure limitation of 2-15 pounds per square inch was held to be readable on a reference which taught a pressure "of the order of about 15 pounds to the square inch. *In re Erickson*, 343 F.2d 778, 145 USPQ 207 (CCPA) 1965).

The prior art taught carbon monoxide concentrations of "about 1 - 5%" while the claim was limited to "more than 5%." The court held that "about 1 - 5%" allowed for concentrations slightly above 5% thus the ranges overlapped. *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

Also Battaerd'481 teaches copolymers with ratios of triallylamine and diallylamine, which would encompass ratios such as used in the instant invention. Rabon also teaches amounts of cross-linking

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agent in the ion-exchange resin encompassing the range of that used in the instant invention (e.g., col. 2, lines 11-12). Lacking a showing of criticality for using as the basic anion exchange resin a copolymer of N,N-diallylamine hydrochloride and N,N,N-triallylamine hydrochloride with a swelling ratio as is instantly claimed, as the catalyst in the hydroxyethylation of acrylic acid as taught by Wheeler, Clayton, Rabon or Pike, it would have been obvious to one of ordinary skill in the art to use such a basic ion exchange resin as taught by Battaerd'481, with an expectation of equivalent results to those taught and/or obvious from the teachings of the primary references.

8. Applicant traverses the rejection arguing the following:

"None of the documents relied upon by the office action, i.e., Wheeler, Clayton, Rabon, or Pike, teach or suggest a polymer gel catalyst having a cyclic amine or quaternary ammonium functional group in the main chain of the polymer. That is, each of the cited documents teach or suggest a polystyrene polymer having acyclic amine or quaternary ammonium functional groups pendant from the polymer main chain, e.g., each of the cited documents recite cross-linked polystyrene ion-exchange resins having amine or ammonium groups attached to a phenyl side chain of a styrene residue. Moreover, none of the cited documents teach or suggest the methods claimed by the present invention."

This is not deemed to be persuasive because this was an acknowledged deficiency of the primary references and the rejection is not based solely on the primary references but rather a combination of references.

Applicant cannot show non-obviousness by attacking the reference individually where, as here, the rejection is based on a combination of references. *In re Keller*, 208 USPQ 871 (CCPA 1981).

9. Applicant disagrees with the Examiner's position that a broad range of basic anion exchange resins are recited by the cited documents such that one skilled in the art would be motivated to substitute an unrelated basic polymer for the disclosed catalysts. To support their position applicant states the following.

"Each of the cited documents teach a cross-linked polystyrene ion exchange resin having pendant acyclic amine or ammonium residues on the side chains of the styrene residues. Thus, the scope of ion exchange resins suitable for use in the reactions recited by Wheeler, Clayton, Rabon, and Pike is quite narrow. None of the cited documents teach resins comprising cyclic amine residues or cyclic quaternary ammonium salt residues in the main chain or pendant from the main chain of the disclosed ion exchange resins."

This is not deemed to be persuasive because the references are not so limited. For instance, Wheeler discloses "[e]xamples of the myriad ion exchange resins from which the catalyst of the instant invention

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can be formed ---" (see col. 1, lines 46-61), which clearly are not limited to those indicated by applicant. Rabon specifically discloses the use of acrylic based resins as opposed to styrene type resins (see e.g., col. 1, line 63 to col. 2, line 19). Pike teaches that the resin consists essentially of alkyl, acrylic, methacrylic and/or aromatic units, of which styrene unit containing polymers are only one example. Thus, one of ordinary skill in the art would clearly envisage from the references collectively, that a broad range of basic anion exchange resins are useful catalysts for the hydroxyalkylation of carboxylic acids such as the hydroxyethylation of acrylic acid. As indicated above, lacking a showing of criticality for the ion-exchange resins of the instant invention, it would have been obvious to one of ordinary skill in the art employ other basic ion exchange resins as a catalyst for the hydroxyethylation of acrylic acid with a reasonable expectation of success. The triallylamine/diallylamine based ion-exchange resins taught by Battaerd'481, is such an alternative basic ion exchange resin, which is well known.

10. In regards to the motivation to combine references, "[t]here are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art." *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457-1458 (Fed. Cir. 1998). In the instant situation it is believed that one of ordinary skill in the art, confronted with the teachings of the combined references would have found it obvious to use the ion-exchange resins taught by Battaerd'481 for reasons of record. It is not necessary that the references specifically teach that they should be combined.

Obviousness Double Patenting Rejection

11. **Claims 14-19, 21-24 and 26-29 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of copending Application No. 09/880,876, now U.S. Patent 6,646,083.** The basis of this rejection was stated in Detailed Action § 17-18 of the previous Office Action.

12. Applicant's argument that the obviousness double patenting rejection is not proper is incorrect. The issues concerning double patenting are greater than just an "unjustified extension of time" as argued by applicant. The issue also involves potential dual ownership of patented subject matter.

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Disclaiming each one of the conflicting double patenting references is necessary to avoid the problem of dual ownership of patents to patentably indistinct inventions in the event that the patent issuing from the application being examined ceases to be commonly owned with any one of the double patenting references that have issued or may issue as a patent. Note that 37 CFR 1.321(c)(3) requires that a terminal disclaimer "[i]nclude a provision that any patent granted on that application or any patent subject to the reexamination proceeding shall be enforceable only for and during such period that said patent is commonly owned with the application or patent which formed the basis for the rejection." See M.P.E.P. § 804.02 IV.

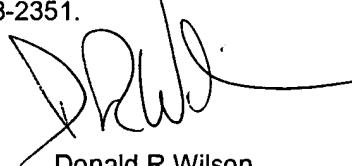
13. Applicant's willingness to file a terminal disclaimer is noted, and such would overcome this rejection.

Future Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald R Wilson whose telephone number is 571-272-1113.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications. The unofficial direct fax phone number to the Examiner's desk is 571-273-1113.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-2351.



Donald R Wilson
Primary Examiner
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